PERMIT APPLICATION NUMBER: NRS#03.295

APPLICANT: The Ensworth School
Office of the Headmaster
211 Ensworth Avenue
Nashville, Tennessee 37205
(615) 383-0661

LOCATION: The proposed project is located at Vaughn Creek, a tributary of the Little Harpeth River, near Bellevue, Davidson County, Tennessee.

WATERSHED DESCRIPTION: Vaughn Creek is located within the Harpeth River Watershed. The immediate area of the project is predominantly suburban residential and park use.

Dimensions of Vaughn Creek were measured at various locations along both the natural reaches of the stream and the existing disturbed (channelized) reach. Channel widths measured across the channel from the ordinary high water marks (OHWM) on both banks ranged from 11.7 feet to 28.2 feet. Water depths ranged from a few inches in riffles to approximately 3 feet in pools. Water velocity was estimated at 1.5 feet per second.

Unaltered portions of the stream course are characterized by moderate sinuosity and a high width to depth ratio. The average stream gradient is approximately 0.5% to 1 %. Channel morphology of the natural reaches above and below the disturbed reach along the highway is generally characterized by a steep cut bank and an opposing bank that is lower and more gradual in slope. The channel in these reaches exhibits moderate sinuosity that is consistent for first order streams of similar watershed area and gradient in the Nashville Basin. Channel bank materials in the natural reaches are generally comprised of natural soil and regolith overlying limestone bedrock.

In the channelized reach, the channel morphology is uniformly U-shaped with both banks of approximately equivalent height above the channel base. The channel in this reach has been straightened and exhibits no sinuosity. Channel bank materials in this reach consist of natural soil and regolith on the south bank of the stream and primarily riprap and road base materials overlying rock on the north bank.

As the primary substrate material of Vaughn Creek, the Catheys formation, typically appears in the streambed as large, horizontally bedded slabs with moderately smooth and level surfaces. The bedrock slabs range in thickness from a few inches to 2 feet and weather along joints and fractures, producing accessory streambed occurances of tabular boulders and cobbles. Secondary occurrences. Secondary occurrences of chert gravel, sand and silt also are present along the surface of the bedrock slabs, with richer gravel, sand and silt deposits occurring in joints, along point bars and at the bottom of pools.

DESCRIPTION: Scheduled widening of Highway 100 will require relocation of approximately 700 feet of Vaughn Creek. The portion of the stream that will be affected by the highway widening is the previously modified (channelized) reach that extends immediately along the highway. The applicant proposes to fill portions of the existing channel to provide space for the highway expansion and to replace the previously modified stream reaches with a newly constructed channel and riparian margin. The constructed channel will be designed to more closely resemble the natural stream morphology and function as is represented by the existing natural channel reaches that are located upstream and downstream of the modified reach now extending along Highway 100.

PERMIT COORDINATOR: Dorsey Horne, STATE OF TENNESSEE, Department of Environment and Conservation, Division of Water Pollution Control, 7th Floor, L & C Annex, 401 Church Street, Nashville, Tennessee 37243-1534

USGS QUAD: BELLEVUE, TENNESSEE 308-SW